Large-Scale Demonstration and Deployment Project
Fact Sheet

Fuel Storage Canals and Associated Facilities at Idaho National Engineering and Environmental Laboratory

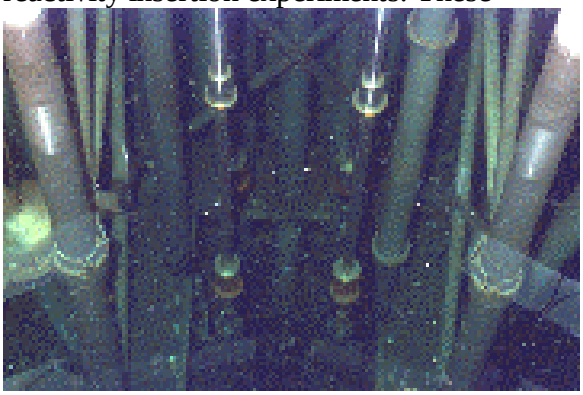
In Partnership With The Office of Science and Technology

Introduction

The Idaho National Engineering and Environmental Laboratory (INEEL) Fuel Storage Canals and Underwater and Underground Facilities Large-Scale Demonstration and Deployment Project (LSDDP) will integrate expertise from the Department of Energy (DOE) and an interdisciplinary Integrating Contractor (IC) Team consisting of representatives from industry; universities; and the international community. The focus of current D&D activities is three INEEL facilities. The facilities are the Test Reactor Area (TRA), the TRA Filter Pit System, and the Initial Engine Test (IET) Control Room at Test Area North (TAN) 620.

This LSDDP is a high priority for the DOE/Commercial Nuclear Utilities D&D Consortium, with demonstrated technologies having deployment opportunities in the nuclear utility market through the consortium.

System Descriptions: INEEL's Test Reactor Area (TRA) houses two underwater test reactors located in building 660 used for reactivity insertion experiments. These reactors achieved criticality in 1960 and 1962. The fuel rods are removed and stored. The reactors have not been operated since 1991. The reactors are aluminum structures located 15 feet apart in a 30,000 gallon common water canal approximately 8' wide x 28' long x 18' deep. Contamination includes radioactive elements, lead, and chromium.



INEEL Test Reactor Area

Five structures in the TRA Filter Pit system contain large filters associated with test reactor operations. The facilities are contaminated with lead, radioisotopes, and deteriorating asbestos. The filters are located in restricted entry pits, and work will have to be done remotely and in confined spaces.

TRA underground filter pits

TAN-620 Initial Engine Test Control Room is a massive underground, shielded, heavily reinforced concrete structure. TAN-620 served as the control center for the engine tests in the Aircraft Nuclear Propulsion Program conducted at INEEL in the late 1950s and 1960s. Contamination includes asbestos, mercury, lead, and some potential radiation.

Technical Needs: Eleven to 18 innovative and improved technologies will be demonstrated. The LSDDP will be

evaluating performance in 1) underwater inspection, characterization, and dismantlement; 2) inspection, characterization, and dismantlement in confined spaces; 3) recycle of materials from D&D activities; 4) removal of loose radiological contamination on walls, floors, piping, and equipment; 5) removal of fixed radiological contamination on concrete; 6) tank, vessel, and piping decontamination; and 7) lead plate radiological decontamination.

Current Status: The PCB Analyzer demonstration was started on June 2, 1999, with the collection of samples for both the baseline and new technologies, and was completed November 18, 1999. This screening tool allows D&D operations to make immediate determinations for dispositioning rooms and facilities, rather than wait the typical 30-90 days for conventional laboratory results.

The Copper Wire Recycle System was shipped from Germany and demonstrated during November 1999. The technology was demonstrated in support of a NETL-sponsored and funded Program Opportunity Notice. Thirteen and a half tons of insulated copper wire, both uncontaminated and surrogate contaminated, were processed to obtain uncontaminated copper for recycling. For this demonstration, a surrogate of cobalt, cesium, and fluorescein was applied to the cable to provide post-demonstration evidence of the efficiency of the system to separate and collect contaminated materials and to ensure the copper remained uncontaminated.

Copper Recycling Unit

After pre-sizing and sorting, the contaminated cable was fed into the system where it was granulated. The granulated copper and insulation were mechanically sorted and collected for disposal. The bulk of the contamination was contained in the dust collection system. Any remaining contamination was fixed to the insulation. The copper was recycled and the insulation disposed of as filler in low-level waste disposal packages. The recycling process reduced the waste volume by 80 percent and provided 8 1/2 tons of recyclable copper.

Ten demonstrated technologies, as of February 2000, are: 1) Alloy Analyzer (Niton Model 800), 2) Automatic Locking Scaffold System, 3) Copper Recycling (Cable Stripper), 4) Electromagnetic Radiography (EMR), 5) Global Positioning Radiometric Scanner System, 6) Lead Paint Analyzer, 7) Low-Level Waste (LLW) Packaging, (Soft-Sided Waste Containers), 8) Paint Scaler, 9) PCB Analyzer, and 10) Remote Underwater Characterization System.

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